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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,018	08/16/2006	Gerardus P. Karman	GB040042	9277

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EXAMINER	
SPAR, ILANA L	

ART UNIT	PAPER NUMBER
2629	

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10/13/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/598,018	KARMAN, GERARDUS P.	
	Examiner	Art Unit	
	ILANA SPAR	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 August 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17,19-24,26 and 29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *29* is/are allowed.

6)☒ Claim(s) *1-8,10-17,19-24 and 26* is/are rejected.

7)☒ Claim(s) *9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The following Office Action is responsive to the amendments and remarks received on August 7, 2009.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4-8, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamazaki (US Patent No. 6,115,007).

With reference to claim 1, Yamazaki teaches a display device for displaying a three dimensional image such that different views are displayed according to the viewing angle, the display device including:

a display panel (20) having a plurality of separately addressable pixels for displaying said image (see column 2, lines 51-58), the pixels being grouped such that different pixels in a group along a first axis correspond to different views of the image (see Figure 4), each pixel in a group being positioned relative to a respective discrete light source (see column 2, lines 65-66) and each pixel being separately controllable to vary an optical characteristic of each pixel to generate an image according to received image data (see column 3, lines 17-18);

wherein the sizes of the pixels within a group vary as a function of the viewing angle of the pixels with respect to the respective light source (see Figure 3, items 301, 302, 303) along the first axis; and

polarizing elements of said display panel are oriented so as to minimize viewing angle dependence relative to a second axis, wherein said second axis is orthogonal to the first axis.

Yamazaki inherently teaches that polarizing elements of said display panel are oriented so as to minimize viewing angle dependence relative to a second axis, wherein said second axis is orthogonal to the first axis, based on the inherent optical characteristics of such a display (see page 12 of the current application, lines 28-32).

With reference to claim 2, Yamazaki teaches all that is required with reference to claim 1, and further teaches that the sizes of the pixels within a group increase with increasing viewing angle (see column 3, lines 45-56).

With reference to claim 4, Yamazaki teaches all that is required with reference to claim 2, and further teaches that the increasing pixel sizes within a group are adapted to render the angular size of view of the respective light source independent of the viewing angle (see column 3, lines 57-60).

With reference to claim 5, Yamazaki teaches all that is required with reference to claim 2, and further teaches that the increasing pixel sizes within a group are adapted to substantially normalise the intensities displayed by each pixel in the group so as to be independent of viewing angle (see column 3, lines 57-60).

With reference to claim 6, Yamazaki teaches all that is required with reference to claim 1, and further teaches that each pixel group includes a central pixel positioned to correspond to zero viewing angle (see column 4, lines 1-5).

With reference to claim 7, Yamazaki teaches all that is required with reference to claim 6, and further teaches that the pixel sizes in a group increase either side of the central pixel (see column 4, lines 6-17 and Figure 3).

With reference to claim 8, Yamazaki teaches all that is required with reference to claim 7, and further teaches that the pixel sizes increase symmetrically on either side of the central pixel (see column 4, lines 6-17).

With reference to claim 13, Yamazaki teaches all that is required with reference to claim 1, and further teaches a display driver for controlling said optical characteristic of each pixel within a group (see column 3, lines 17-18).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 3, 20-23, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki in view of Lamvik (US Patent No. 7,495,638).

With reference to claim 3, Yamazaki teaches all that is required with reference to claim 1, but fails to teach that the sizes of the pixels within a group increase nonlinearly with increasing viewing angle.

Lamvik et al. teaches that the sizes of the pixels within a group increase nonlinearly with increasing viewing angle (see Figure 1, sections 12, 14, 18).

It would have been obvious to one of ordinary skill in the art at the time of invention that the pixel sizes may increase at any rate necessary in order to maintain the equivalent luminance between the smaller, centrally located pixels and the larger, peripheral pixels.

With reference to claim 20, Yamazaki teaches a method for displaying a three dimensional image on a display device such that different views of the image are displayed according to the viewing angle, the method comprising the step of:

supplying image data for each one of a plurality of separately addressable pixels in a display panel (see column 3, lines 17-18), the pixels being grouped such that different pixels in a group along a first axis correspond to different views of the image (see Figure 4), and each pixel in a group being positioned relative to a respective discrete light source (see column 2, lines 65-66), the pixel intensity data values each for controlling an optical characteristic of a respective pixel to generate the image (see column 3, lines 17-18);

wherein the sizes of the pixels within a group vary as a function of the viewing angle of the pixels with respect to the respective light source along the first axis (see Figure 3, items 301, 302, 303); and

polarizing elements of said display panel are oriented so as to minimize viewing angle dependence relative to a second axis, wherein said second axis is orthogonal to the first axis.

Yamazaki inherently teaches that polarizing elements of said display panel are oriented so as to minimize viewing angle dependence relative to a second axis, wherein said second axis is orthogonal to the first axis, based on the inherent optical characteristics of such a display (see page 12 of the current application, lines 28-32).

Yamazaki fails to teach that the display device processes image data to form pixel intensity data values.

Lamvik et al. teaches processing image data to form pixel intensity data values for each one of a plurality of separately addressable pixels in a display panel (see column 8, lines 50-65).

It would have been obvious to one of ordinary skill in the art at the time of invention that a display must generate data values for each of the pixels such that the data can be applied at the correct intensity to generate the desired image.

With reference to claim 21, Yamazaki and Lamvik et al. teach all that is required with reference to claim 20, and Yamazaki further teaches that the pixel sizes within a group are varied by increasing at least one of a linear or areal dimension of the pixels (see column 3, lines 45-56).

With reference to claim 22, Yamazaki and Lamvik et al. teach all that is required with reference to claim 21, and Yamazaki further teaches that the pixel sizes within a group are selected to render the angular size of view of the respective light source independent of the viewing angle (see column 3, lines 57-60).

With reference to claim 23, Yamazaki and Lamvik et al. teach all that is required with reference to claim 21, and Yamazaki further teaches that the pixel sizes within a group are selected to substantially normalise intensities displayed by each pixel in the group so as to be independent of viewing angle (see column 3, lines 57-60).

With reference to claim 26, Yamazaki and Lamvik et al. teach all that is required with reference to claim 20, and Yamazaki further inherently teaches that the second axis is the vertical axis when the display panel is in normal use.

7. Claims 10-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki in view of Akamatsu (US Patent No. 6,172,807).

With reference to claim 10, Yamazaki teaches all that is required with reference to claim 1, but fails to teach a plurality of discrete light sources.

Akamatsu teaches a back panel for providing a plurality of said discrete light sources, each group of pixels in the display panel being positioned to receive light from a respective one of the discrete light sources (see column 5, lines 31-32).

It would have been obvious to one of ordinary skill in the art at the time of invention that of the several possible configurations of a display backlight, one common one is a backlight comprised of multiple light sources arranged in an array.

With reference to claim 11, Yamazaki and Akamatsu teach all that is required with reference to claim 10, and Akamatsu further teaches that the back panel provides a plurality of line sources of illumination (see column 5, lines 32-33).

With reference to claim 12, Yamazaki and Akamatsu teach all that is required with reference to claim 10, and Akamatsu further teaches that the back panel provides a plurality of point sources of illumination (see column 5, lines 42-46).

With reference to claim 14, Yamazaki and Akamatsu teach all that is required with reference to claim 11, and Yamazaki further teaches that the display panel is a light-transmissive display panel adapted for viewing from a side opposite to the side on which the back panel is located (see column 2, lines 65-66).

8. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki in view of Bass et al. (US Patent No. 4,959,641).

With reference to claim 15, Yamazaki teaches all that is required with reference to claim 1, but fails to teach a lenticular array.

Bass et al. teaches a lenticular array positioned adjacent to the display panel, each lenticle within the array focusing light from selected pixels in the display panel (see column 3, lines 6-9).

It would have been obvious to one of ordinary skill in the art at the time of invention to use a lenticular array to allow for the viewing of a three-dimensional image without the use of additional instruments (such as glasses), as is known in the art and taught by Bass et al. (see column 1, lines 58-64).

With reference to claim 16, Yamazaki and Bass et al. teach all that is required with reference to claim 15, and Bass et al. further teaches that each lenticle within the array is associated with a said group of pixels (see column 5, lines 43-58 – it is clear that each group of light sources is also associated with a group of pixels, such that each lenticle is associated with a group of pixels).

9. Claims 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki in view of Hoshi et al. (US Patent No. 5,943,166).

With reference to claim 17, Yamazaki teaches all that is required with reference to claim 1, but fails to teach that the optical characteristic is a light transmission characteristic.

Hoshi et al. teaches that the optical characteristic is a light transmission characteristic and the display driver is adapted to control the amount of light passing through each pixel according to an image to be displayed (see column 3, lines 45-50).

It would have been obvious to one of ordinary skill in the art at the time of invention that a liquid crystal display functions by controlling the orientation of liquid crystals to allow a certain amount of light to be transmitted through the liquid crystal panel; it is therefore then obvious that the display controller, in controlling the liquid crystal panel, is controlling the amount of light transmitted through the panel.

With reference to claim 19, Yamazaki and Hoshi et al. teach all that is required with reference to claim 17, and Yamazaki further teaches that the device of claim 17 is incorporated into an object (see column 2, lines 37-38), and inherently teaches that the second axis is defined as the vertical axis when the object is in normal use.

10. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki and Lamvik et al. as applied to claim 20 above, and further in view of Hoshi et al.

Yamazaki and Lamvik et al. fail to teach that the optical characteristic is a light transmission characteristic and that a display driver is adapted to control the amount of light passing through each pixel according to an image to be displayed.

Hoshi et al. further teaches that the optical characteristic is a light transmission characteristic and a display driver is adapted to control the amount of light passing through each pixel according to an image to be displayed (see column 3, lines 45-50).

It would have been obvious to one of ordinary skill in the art at the time of invention that a liquid crystal display functions by controlling the orientation of liquid crystals to allow a certain amount of light to be transmitted through the liquid crystal panel; it is therefore then obvious that the display controller, in controlling the liquid crystal panel, is controlling the amount of light transmitted through the panel.

Allowable Subject Matter

11. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. Claim 29 is allowed.

13. The following is an examiner's statement of reasons for allowance: The prior art of record, either singly or in combination, fails to teach or suggest any reason to size the pixels according to the given equation.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

14. Applicant's arguments filed on August 7, 2009 have been fully considered but they are not persuasive. Applicant argues that Yamazaki does not teach minimizing a viewing angle dependence relative to a second axis. However, Yamazaki teaches a display structure identical to that of Applicant's, and, as cited above, Applicant has disclosed that it is inherent in the structure of the device that the viewing angle dependence is minimized in the vertical (second axis) direction.

Conclusion

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ILANA SPAR whose telephone number is (571)270-7537. The examiner can normally be reached on Monday-Thursday 8:00-4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571)272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bipin Shalwala/
Supervisory Patent Examiner, Art Unit 2629

ILS